

Unit 9

Day 2

Equations with Radicals

1)

$$(x = \sqrt{15 - 2x})^2$$

$$x^2 = 15 - 2x$$

$$x^2 + 2x - 15 = 0$$

$$(x + 5)(x - 3) = 0$$

$$\cancel{x = -5}$$

$$x = 3$$

$$5 = \sqrt{15 - 2x}$$

$$3 = \sqrt{15 - 2x}$$

$$3 = \sqrt{15 - 6}$$

$$3 = \sqrt{9} \checkmark$$

$$x^2 = 5$$

$$x = \pm \sqrt{5}$$

$$2) \quad \left( \sqrt[3]{2x^2 - 5x + 4} \right) = \left( \sqrt[3]{2x^2} \right)^3$$

$$2x^2 - 5x + 4 = 2x^2$$

$$-5x + 4 = 0$$

$$-5x = -4$$

$$x = \frac{4}{5}$$

3)

$$\sqrt{3x+1} + 3 = x$$

$$(\sqrt{3x+1})^2 = (x-3)^2$$

$$3x+1 = x^2 - 6x + 9$$

$$0 = x^2 - 9x + 8$$

$$0 = (x-8)(x-1)$$

$$x=8$$

$$x=1$$

Check

$$\sqrt{24+1} + 3 = 8$$

$$5+3=8 \checkmark$$

$$\sqrt{4} + 3 = 1$$

$$2 + 3 = 1$$

Should be in Day 1!!!!

$$4) \left( \frac{x}{x-2} \right)^2 - \frac{4x}{x-2} = 5$$

$$\text{let } y = \frac{x}{x-2}$$

$$y^2 - 4y = 5$$
$$y^2 - 4y - 5 = 0$$
$$(y-5)(y+1) = 0$$
$$y = 5 \quad y = -1$$

$$\frac{x}{x-2} = 5$$
$$x = 5x - 10$$
$$-4x = -10$$
$$x = \frac{5}{2}$$
$$\frac{x}{x-2} = -1$$
$$x = -x + 2$$
$$2x = 2$$
$$x = 1$$

$$\frac{4x}{x-2} = 4 \cdot \frac{x}{x-2}$$

$$\left\{ \frac{5}{2}, 1 \right\}$$

HOMEWORK: p. 136-7: 27-32, 39-42

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Section 1.4  
Radical Equations; Equations  
Quadratic in Form; Factorable  
Equations

Example 1

$$\sqrt{3t + 4} = 2$$



Example 2

$$\sqrt[3]{1 - 2x} - 3 = 0$$

Example 3

$$\sqrt[5]{2x - 3} = -1$$

Example 4

$$x = 8\sqrt{x}$$

Example 5

$$\sqrt{12 - x} = x$$

Example 5

$$\sqrt{x^2 - x - 4} = x + 2$$

Try This

$$2 + \sqrt{12 - 2x} = x$$

Example 6

$$\sqrt{3x+1} - \sqrt{x-1} = 2$$

Try this:

$$\sqrt{10 + 3\sqrt{x}} = \sqrt{x}$$



Example 7

$$(5x - 2)^{1/3} = 2$$

Example 8

$$x^{3/2} - 3x^{1/2} = 0$$

Homework #1

**Homework #1**  
**p. 123: 7-37 (every third problem)**